

Amendments to the Claims

1. (Canceled)

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40. (Currently Amended) An isolated nucleic acid comprising a recombinant vector including a nucleotide sequence selected from the group consisting of SEQ ID NO: 17, and a sequence complementary to the full length of SEQ ID NO: 17.

41. (Original) An isolated nucleic acid as in claim 40 wherein said vector is an expression vector and said nucleotide sequence is operably joined to a regulatory region.

42. (Previously Presented) An isolated nucleic acid as in claim 41 wherein said expression vector is a mammalian expression vector.

43. (Previously Presented) An isolated nucleic acid as in claim 42 wherein said mammalian expression vector expresses said nucleotide sequence in cells in culture, said cells being selected from the group consisting of fibroblast, liver, kidney, spleen, bone marrow, and neurological cells.

44. (Previously Presented) An isolated nucleic acid as in claim 41 wherein said vector is selected from the group consisting of vaccinia virus, adenovirus, retrovirus, neurotropic viruses, and Herpes simplex.

45. (Currently Amended) An isolated nucleic acid comprising a recombinant expression vector including a nucleotide sequence selected from the group consisting of SEQ ID NO: 17, and a sequence complementary to the full length of SEQ ID NO: 17; said nucleotide sequence being operably joined to a regulatory region, wherein said expression vector encodes at least a functional domain of an hcAMP-GEFII protein having the amino acid sequence of SEQ ID NO: 18, wherein said functional domain of the hcAMP-GEFII protein exhibits guanine nucleotide exchange factor activity in an *in vitro* assay.

46. (Original) An isolated nucleic acid as in claim 41 wherein said vector further comprises sequences encoding an exogenous protein operably joined to said nucleotide sequence and whereby said vector encodes a fusion protein.

47. (Original) An isolated nucleic acid as in claim 46 wherein said exogenous protein is selected from the group consisting of lacZ, trpE, maltose-binding protein, poly-His tags, and glutathione-S-transferase.

48. (Canceled)

49. (Canceled)

50. (Currently Amended) A host cell in culture, said host cell comprising an expression vector of any one of claims 41 or 44-47, or a descendant cell thereof in culture, wherein said host cell is transformed *in vitro* with said expression vector.

51. (Previously Presented) A host cell in culture as in claim 50 wherein said host cell is selected from the group consisting of bacterial cells and yeast cells.

52. (Currently Amended) A host cell in culture as in claim 50 wherein said host cell is a mammalian host cell selected from the group consisting of mammalian fetal cells in culture, mammalian embryonic stem cells in culture, mammalian zygotes in culture, mammalian gametes in culture, and mammalian germ line cells in culture.

53. (Previously Presented) A host cell in culture as in claim 50 wherein said cell is selected from the group consisting of fibroblast, liver, kidney, spleen, bone marrow and neurological cells.

54. (Previously Presented) A host cell in culture as in claim 50 wherein said cell is an invertebrate cell.

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62. (Previously Presented) A method for producing at least a functional domain of an hcAMP-GEFII protein (SEQ ID NO: 18), said method comprising culturing a host cell of any of claims 51-54 under suitable conditions to produce said protein by expressing said nucleic acid, wherein said functional domain exhibits guanine nucleotide exchange factor activity in an *in vitro* assay.

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131. (Previously Presented) A host cell in culture, said host cell comprising an expression vector of claim 42 or 43, or a descendant thereof, wherein said host cell is transformed *in vitro* with said expression vector.

132. (Currently Amended) A host cell in culture as in claim 131 wherein said host cell is a mammalian host cell selected from the group consisting of mammalian fetal cells in culture, mammalian embryonic stem cells in culture, mammalian zygotes in culture, mammalian gametes in culture, and mammalian germ line cells in culture.

133. (Previously Presented) A host cell in culture as in claim 131 wherein said cell is selected from the group consisting of fibroblast, liver, kidney, spleen, bone marrow and neurological cells.

134. (Previously Presented) A method for producing at least a functional domain of an hcAMP-GEFII protein (SEQ ID NO: 18), said method comprising culturing a host cell of claim 50 under suitable conditions to produce said protein by expressing said nucleic acid, wherein said functional domain exhibits guanine nucleotide exchange factor activity in an *in vitro* assay.